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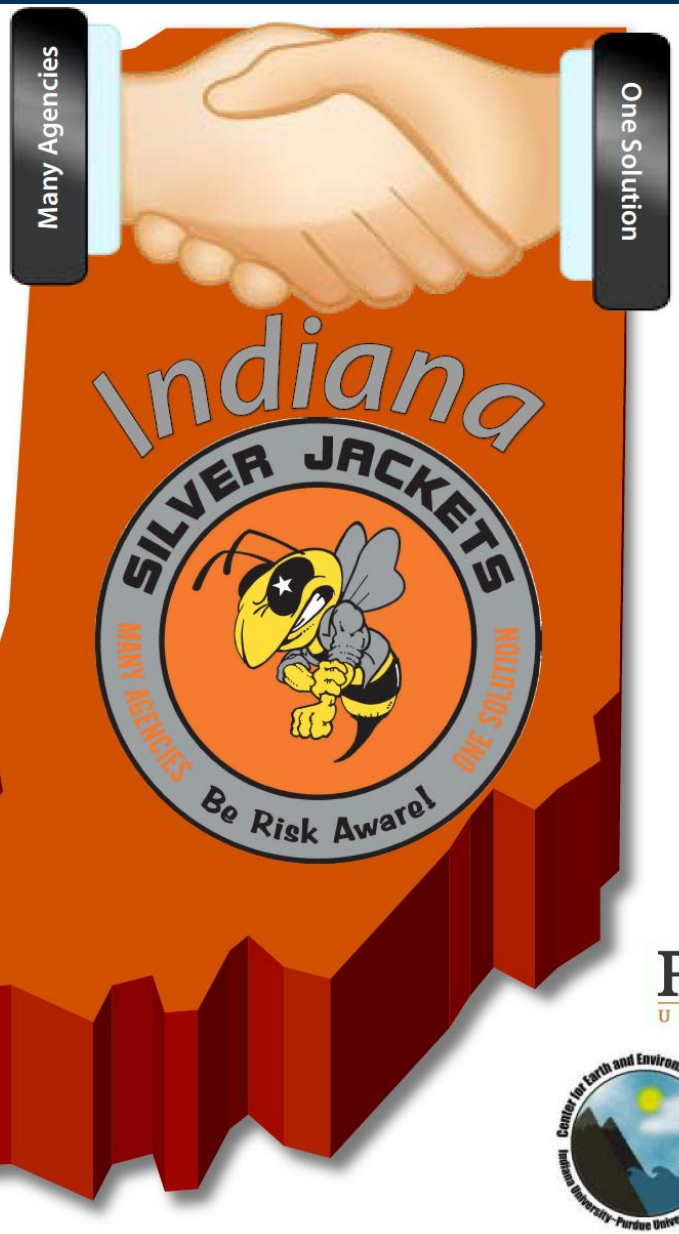
Indiana Silver Jackets Flood Inundation Mapping Program

Scott Morlock

Deputy Director, USGS Indiana Water Science Center

U.S. Department of the Interior
U.S. Geological Survey

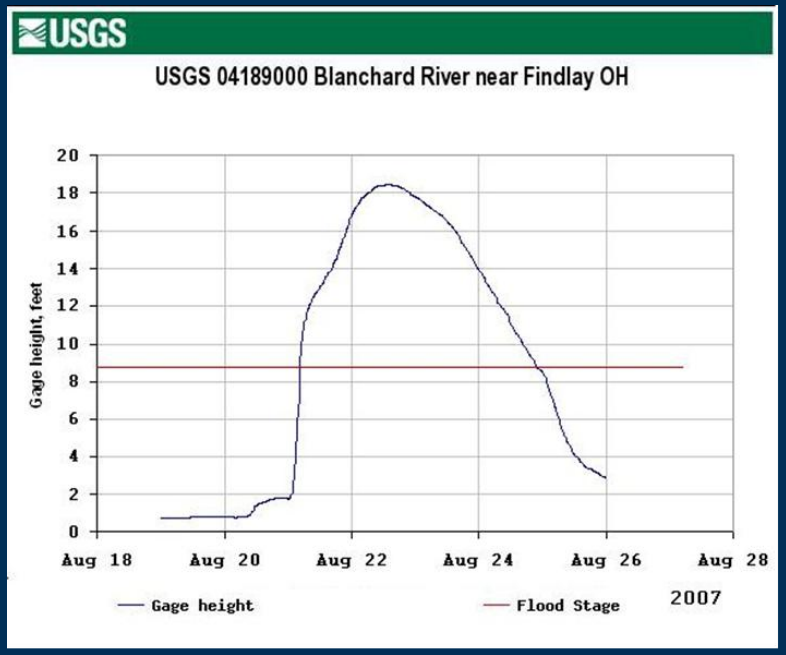
Federal and National Partners

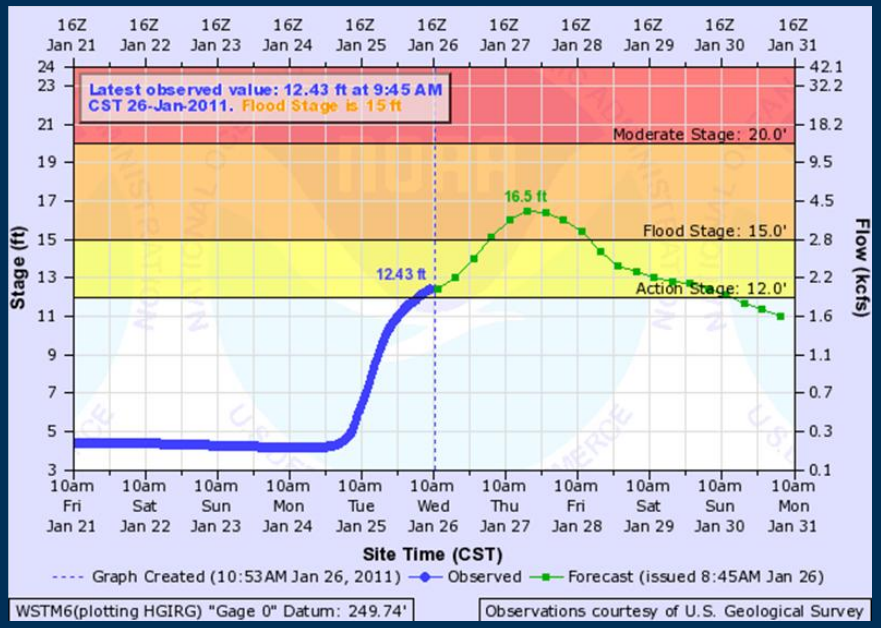


State, Local, and Educational Partners

Real-time and Forecast Flood Inundation Mapping

From this:





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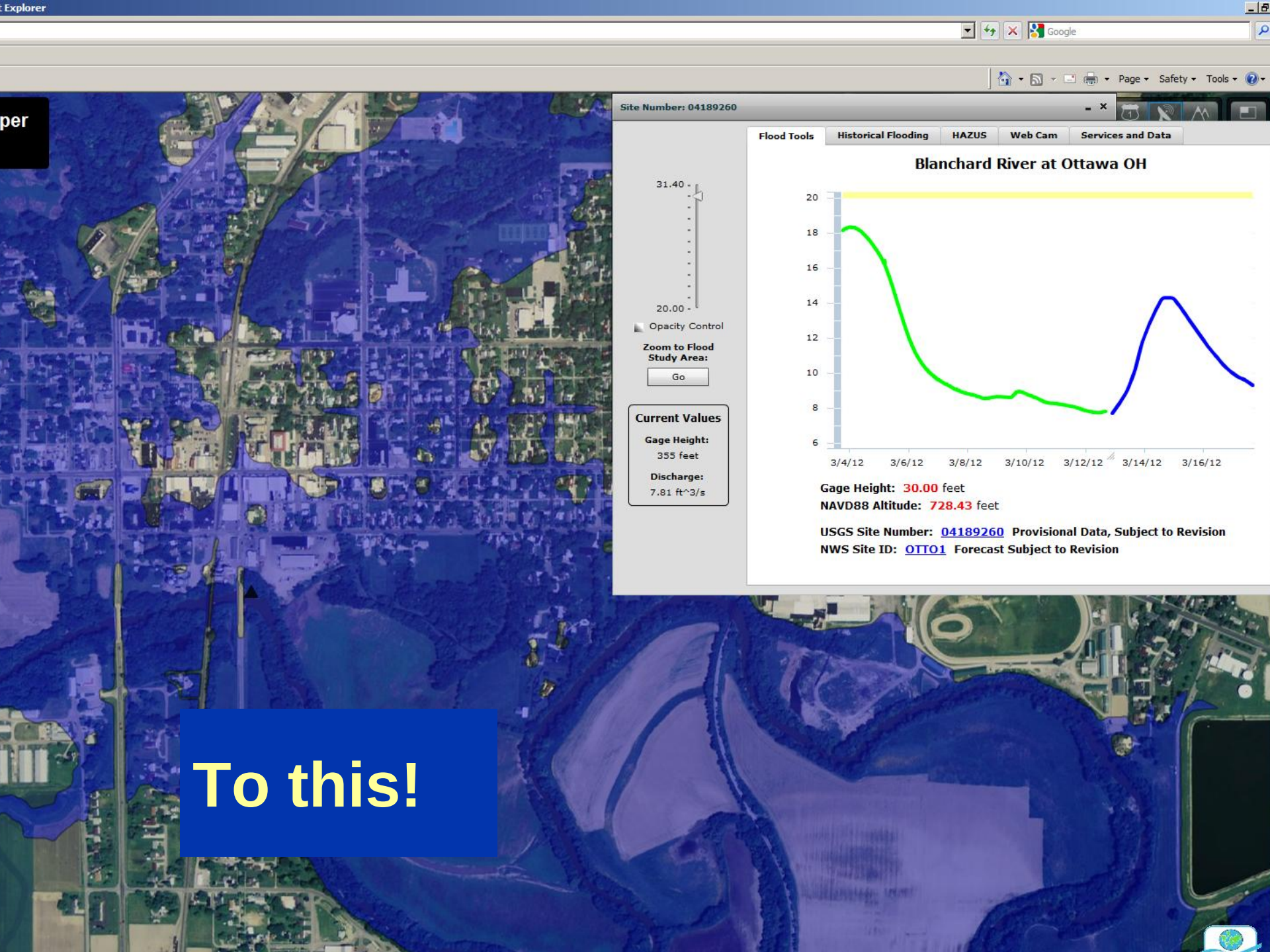
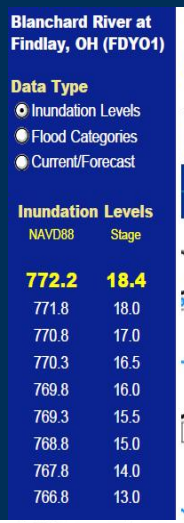
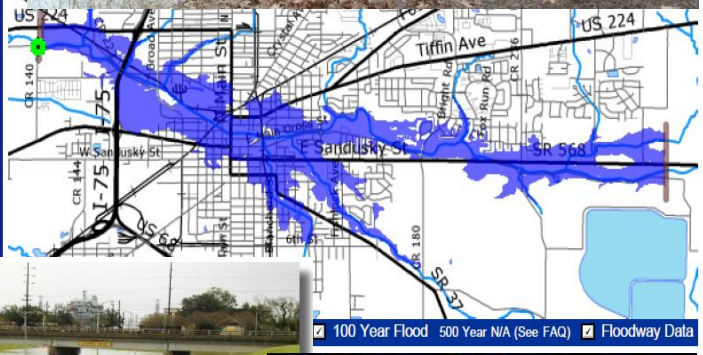

Site Number: 04189260
Flood Tools
Historical Flooding
HAZUS
Web Cam
Services and Data
Blanchard River at Ottawa OH
31.40
20.00
Opacity Control
Zoom to Flood Study Area:
Go
Current Values
Gage Height:
355 feet
Discharge:
7.81 ft^3/s
20
18
16
14
12
10
8
6
3/4/12
3/6/12
3/8/12
3/10/12
3/12/12
3/14/12
3/16/12
Gage Height: 30.00 feet
NAVD88 Altitude: 728.43 feet
USGS Site Number: 04189260 Provisional Data, Subject to Revision
NWS Site ID: OTTO1 Forecast Subject to Revision
To this!

I.M. becomes a tool for flood…..

- Preparedness
  - “What-if” scenarios
- Response
  - Tied to gage & forecast data
- Recovery
  - Damage assessment
- Mitigation & planning
  - Flood risk analyses





Flooded underpass, Beaumont, TX (photo courtesy of L. Roll/FEMA)

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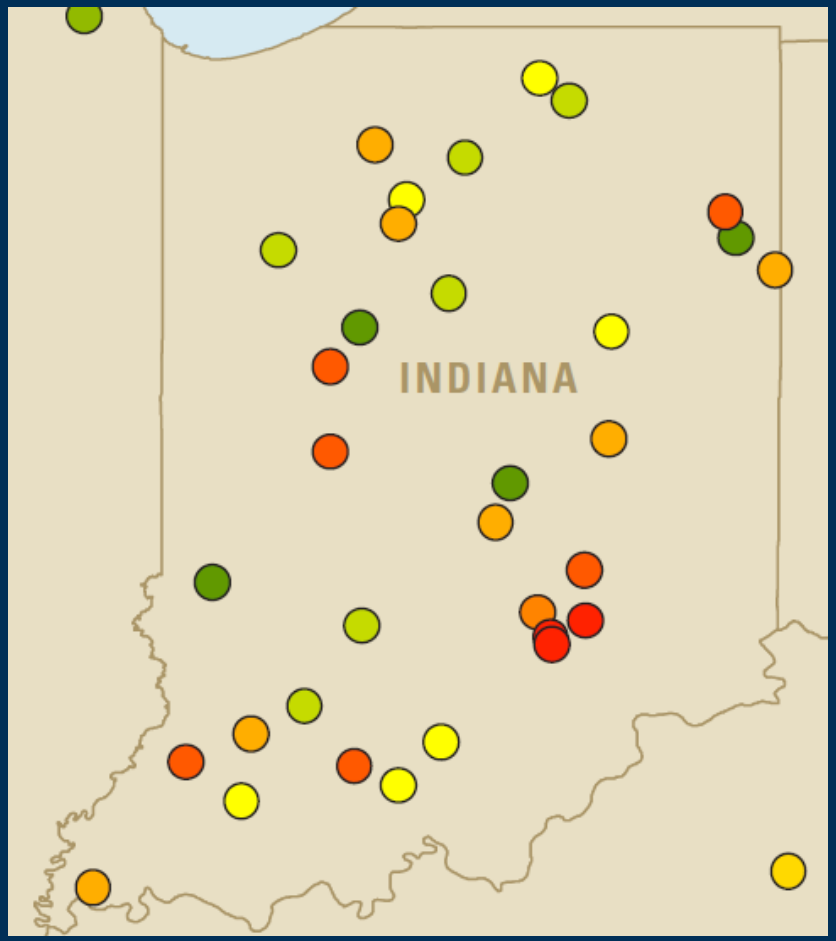
34 Sites across Indiana



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Funding and In-kind Resources

Flood Inundation Mapping Program

1. Consistent visual and electronic format for USGS inundation geospatial products.
2. Static flood inundation map libraries linked to gages/flood forecasts
3. State-of-the art dynamic, real-time flood inundation applications (pilot)
4. A core of USGS and partner agencies – NWS, U.S Army Corps of Engineers, FEMA
5. National USGS FIM Web portal and Web Mapper

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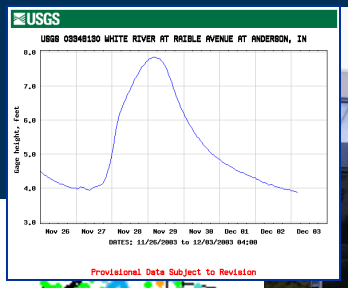
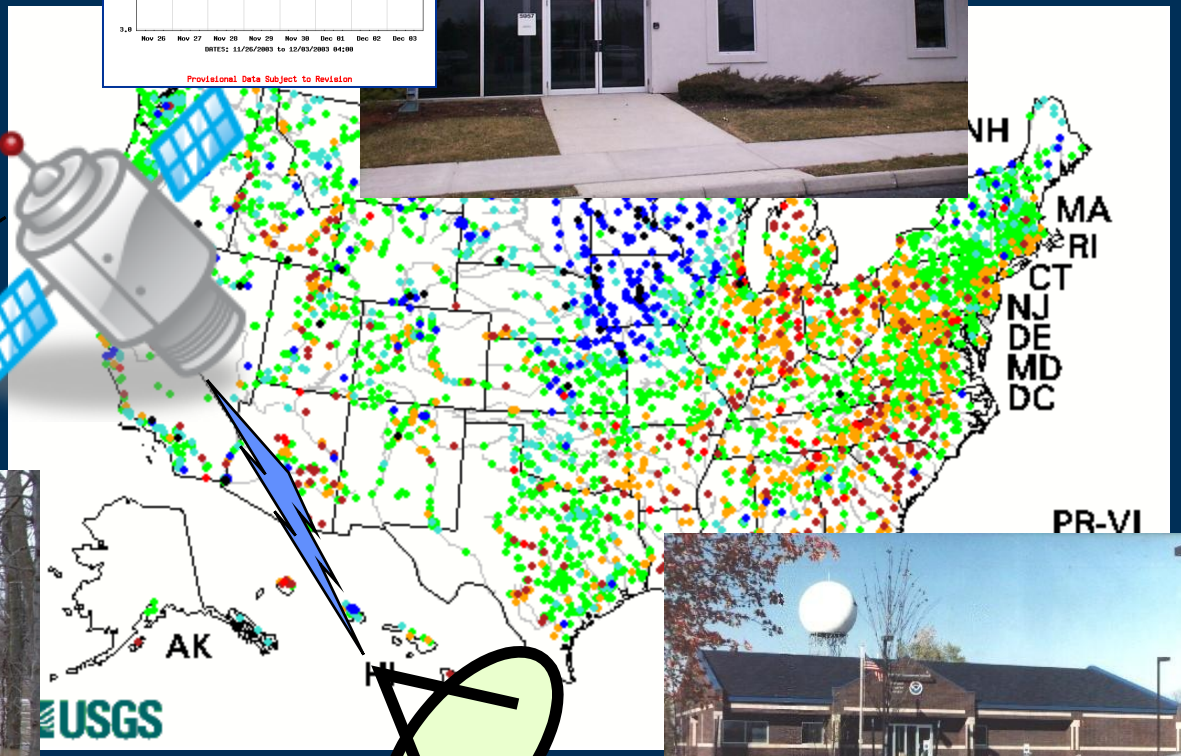
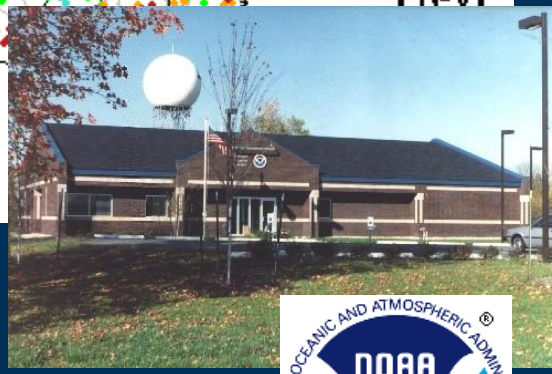
Static Inundation Map Libraries







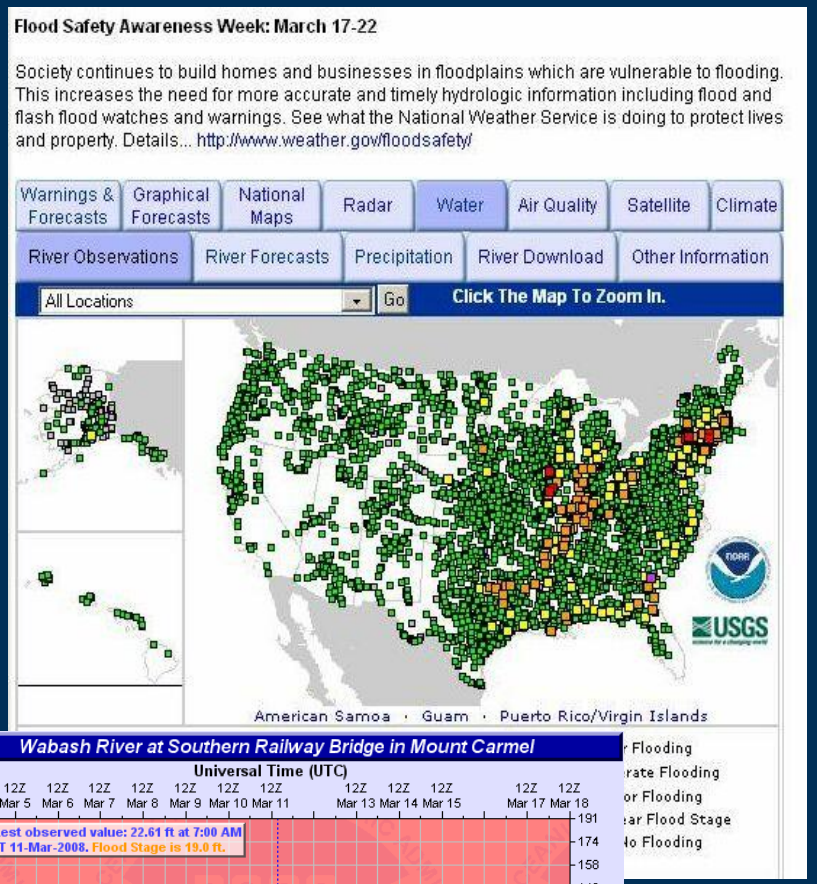
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

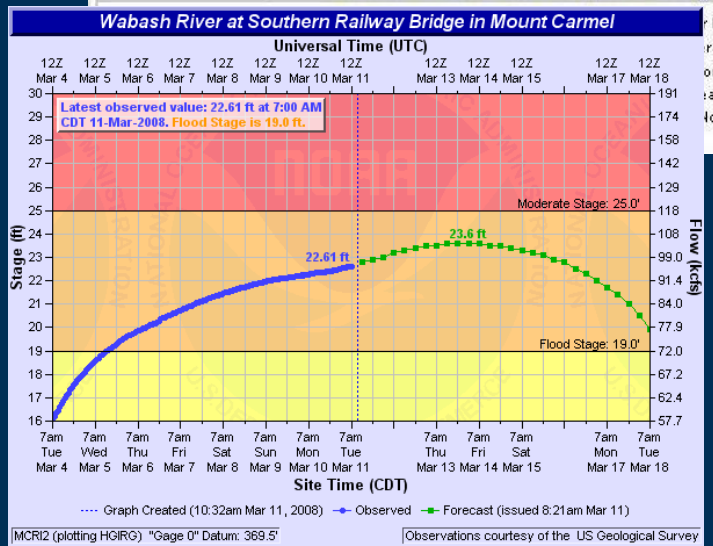
USGS streamgages: 8000 points

NWS AHPS: Advanced Hydrologic Prediction Service

- Forecast stage at flood forecast points
- Most collocated at USGS gages

http://www.weather.gov/ahps/





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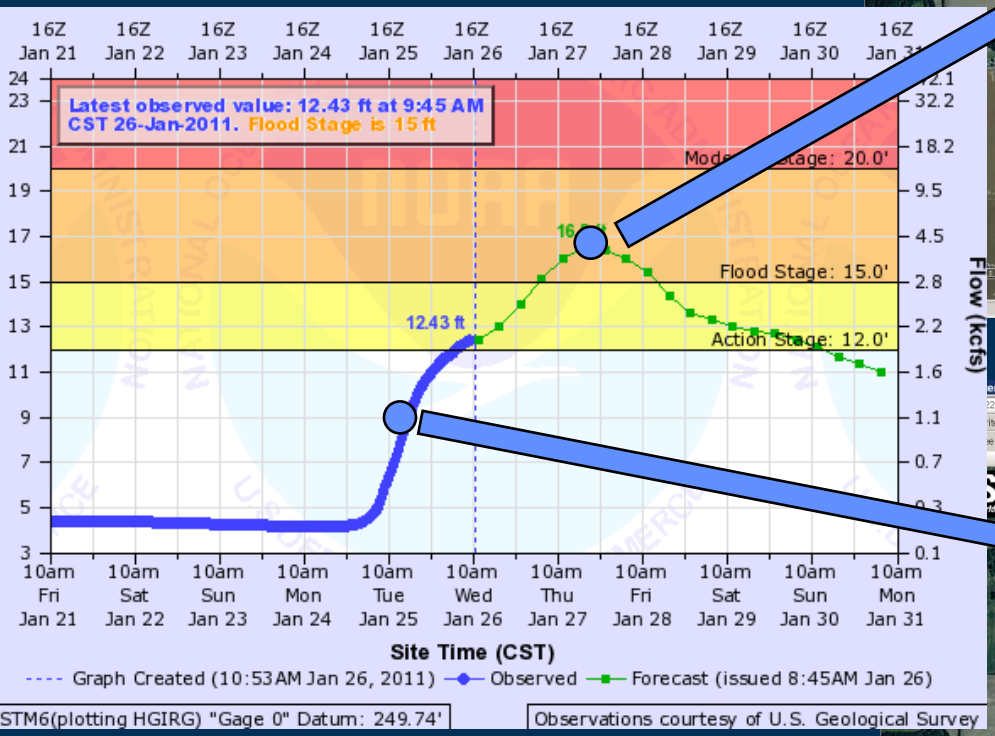
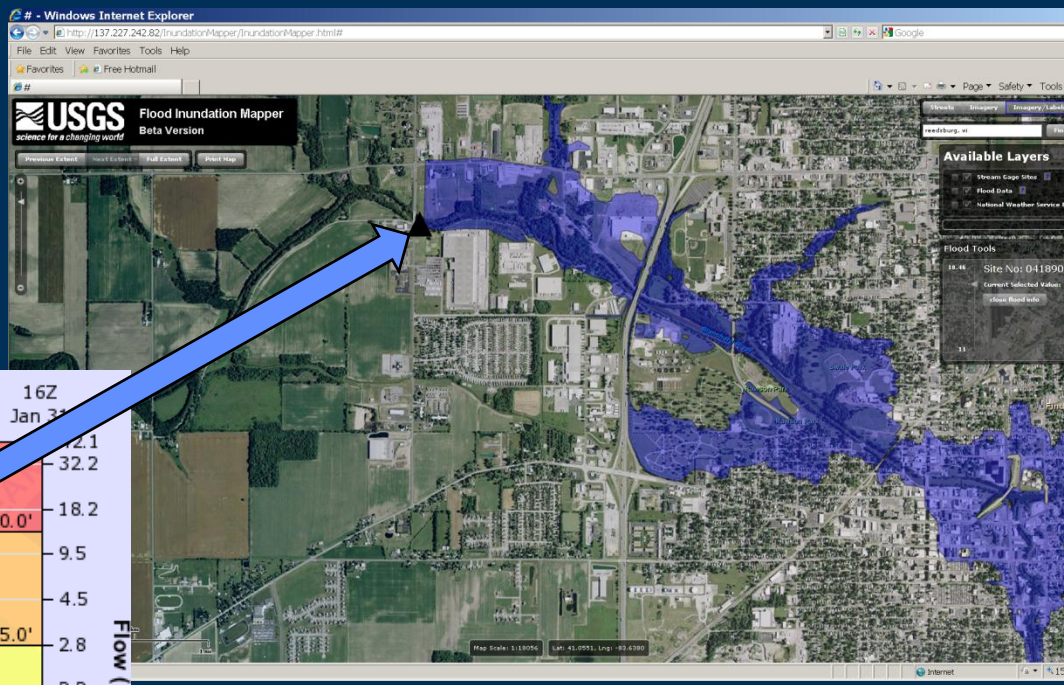
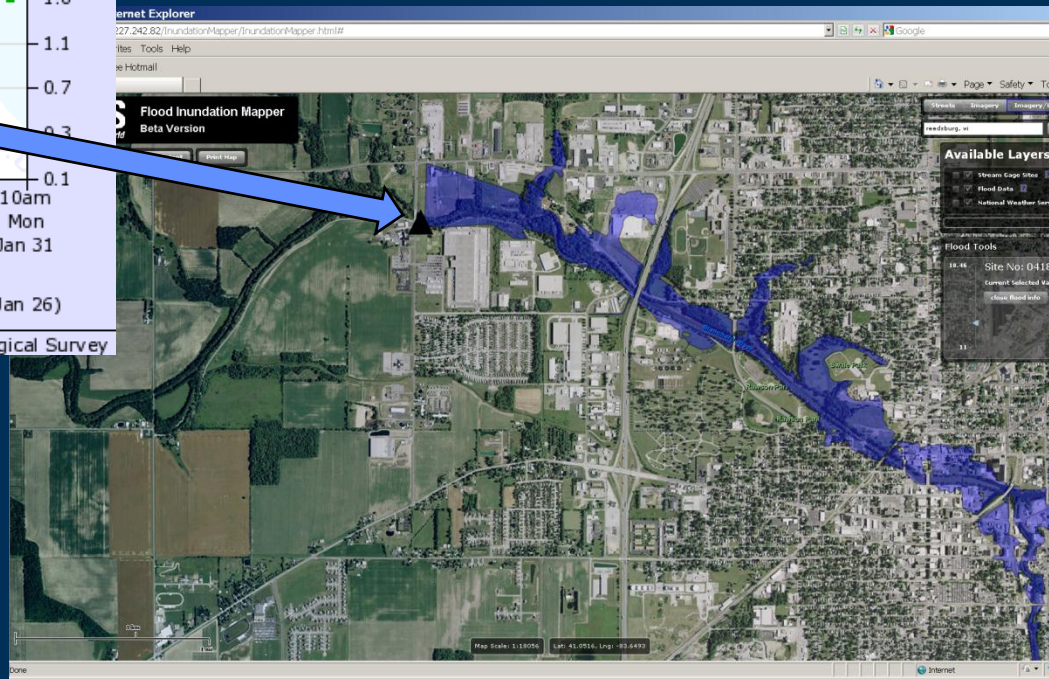

16Z Jan 21
16Z Jan 22
16Z Jan 23
16Z Jan 24
16Z Jan 25
16Z Jan 26
16Z Jan 27
16Z Jan 28
16Z Jan 29
16Z Jan 30
16Z Jan 31
Latest observed value: 12.43 ft at 9:45 AM CST 26-Jan-2011. Flood Stage is 15 ft
Mode Stage: 20.0'
Flood Stage: 15.0'
Action Stage: 12.0'
12.43 ft
Flow (kcfs)
10am Fri Jan 21
10am Sat Jan 22
10am Sun Jan 23
10am Mon Jan 24
10am Tue Jan 25
10am Wed Jan 26
10am Thu Jan 27
10am Fri Jan 28
10am Sat Jan 29
10am Sun Jan 30
10am Mon Jan 31
Site Time (CST)
Graph Created (10:53AM Jan 26, 2011)
Observed
Forecast (issued 8:45AM Jan 26)
STM6(plotting HGIRG) "Gage 0" Datum: 249.74'
Observations courtesy of U.S. Geological Survey


USGS
Flood Inundation Mapper
Beta Version
Available Layers
Flood Tools


Flood Inundation Mapper
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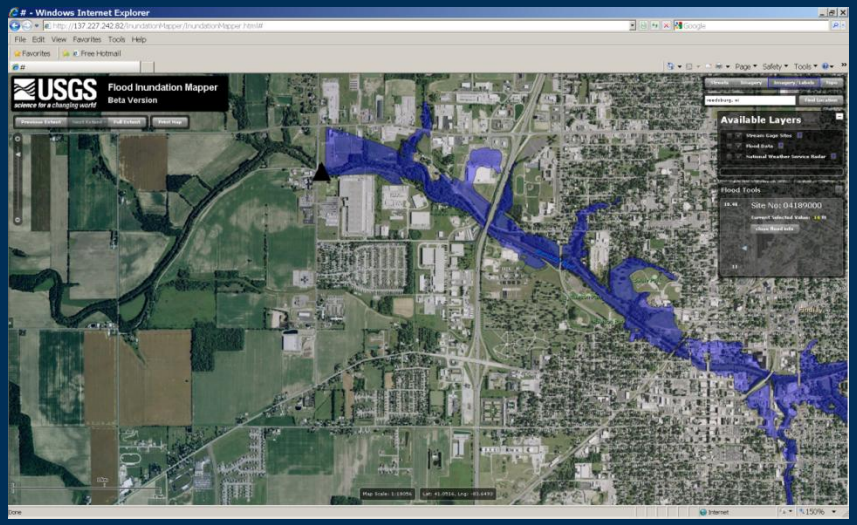
Creation of Inundation-map Libraries

- DEMs (LiDAR) + hydraulic model
- Gage/HWM calibration data
- GIS generated maps
  - bankfull-record stage
  - Predefined map interval
- Linked to USGS real-time gage and NWS flood forecast



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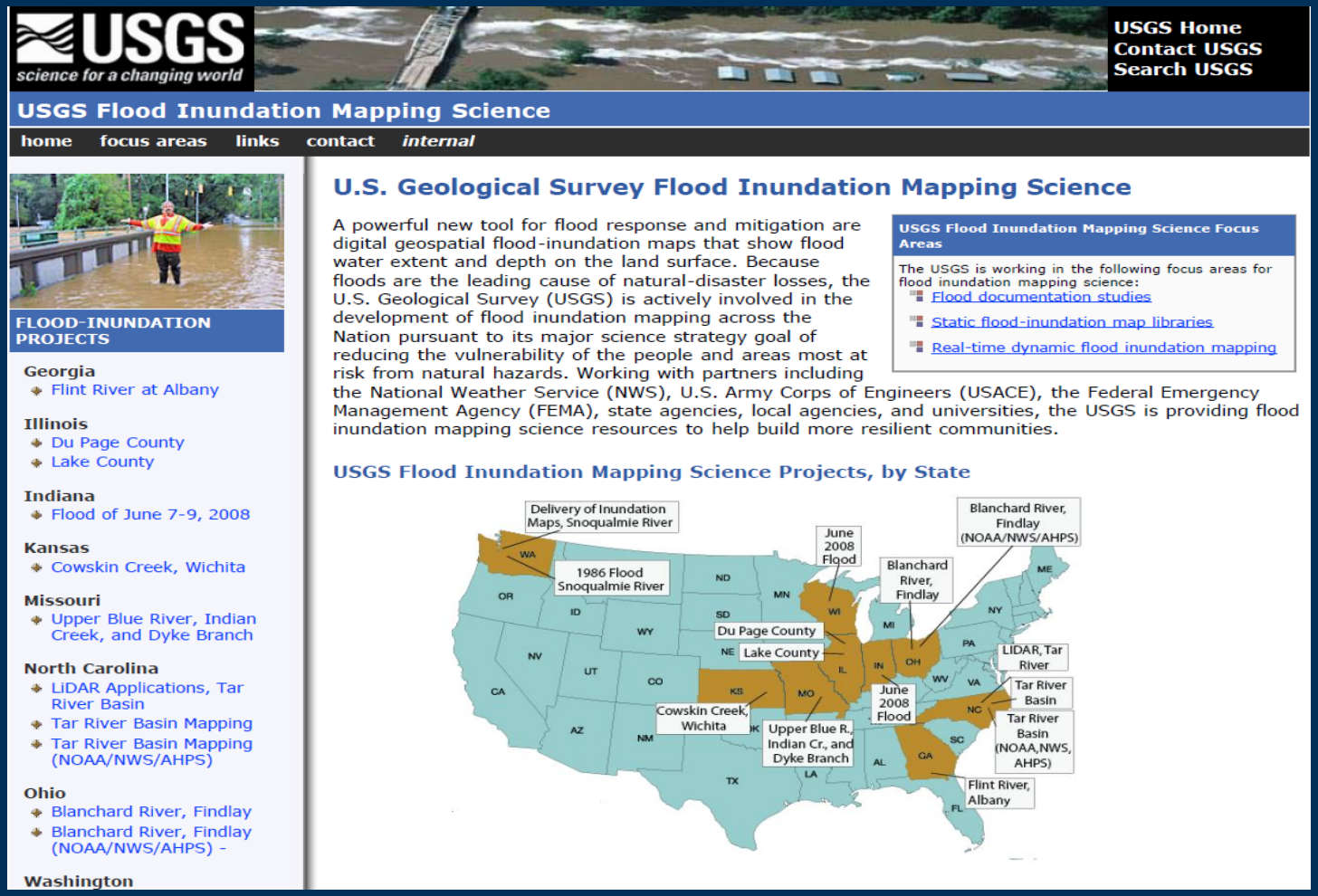
Web Portal



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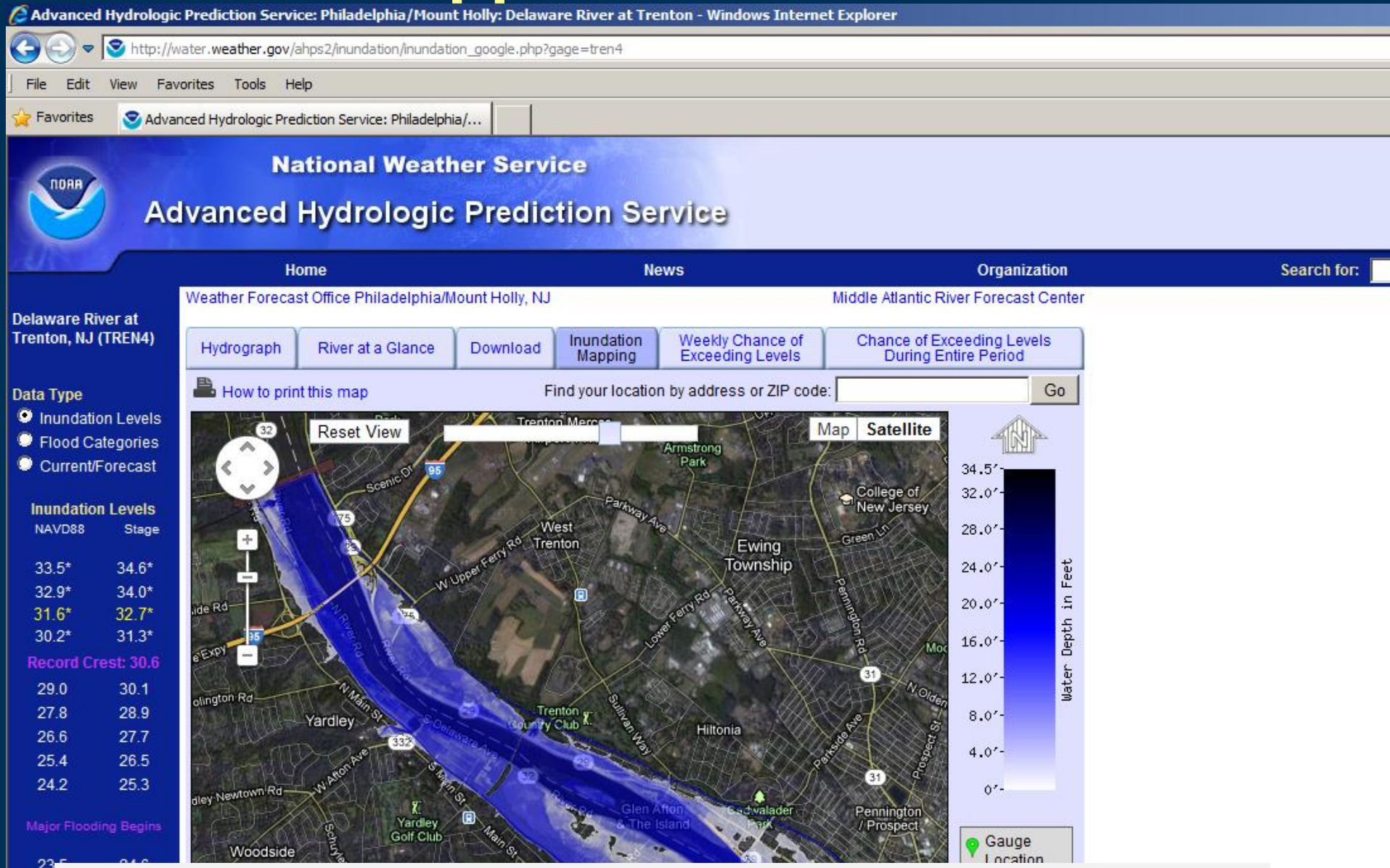
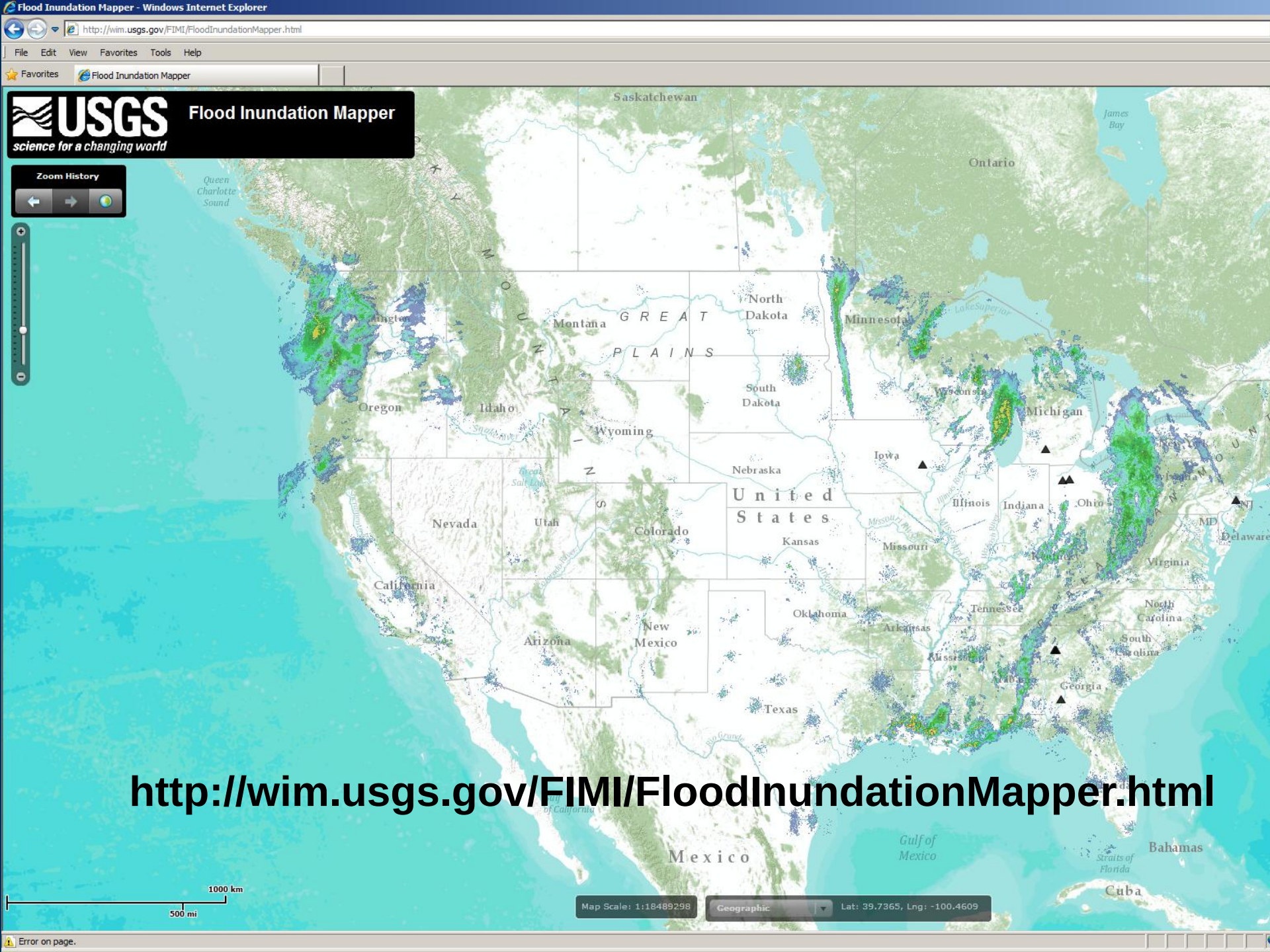
http://water.usgs.gov/osw/flood_inundation/

FIM Web Mappers



http://water.weather.gov/ahps/inundation.php



http://wim.usgs.gov/FIMI/FloodInundationMapper.html

FIM Mapper Features

- View USGS real-time and NWS forecast* stages
  - *If the site is a flood forecast point
- Get historic flood peaks
- Download the GIS maps for use in your applications
  - (FGDC compliant metadata)
- Download/print PDF maps
- Pull HAZUS information
  - If site has the HAZUS feature

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Program Building

- With 200 gages and almost 100 flood forecast points, much work remains
- We hope to continue building libraries in collaboration with the public and private sector
- Think about leveraging efforts such as Risk Map projects to build libraries

Thank you!

Indiana Inundation Project Site:

http://in.water.usgs.gov – "Featured Projects"

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Mapper Demo:
http://wim.usgs.gov/FIMI/FloodInundationMapper.html